

Teaching for Thinking

Peter A Facione
Santa Clara U

Noreen C Facione
UC San Francisco

Carol A F Giancarlo
Santa Clara U

Stephen W Blohm
CA Academic Press



© 1999, The California Academic Press, Millbrae, CA.

Education is nothing more nor less than learning to think.

To mentor, to coach, to teach *for* thinking and *about* thinking is fundamentally to center energy on the learner. It is to orchestrate learning. Teaching for thinking is aimed at strengthening students' reasoned judgment. It is achieved by

harmonizing three elements: a learning environment that nurtures the disposition toward thinking as the preferred approach to defining and resolving problems; the exercise of students' cognitive skills in ever expanding and more challenging contexts that necessitate deepening knowledge of the subject; and by demanding the demonstration of the results as well as the processes of sound reasoned judgment on all assignments and tests that matter.

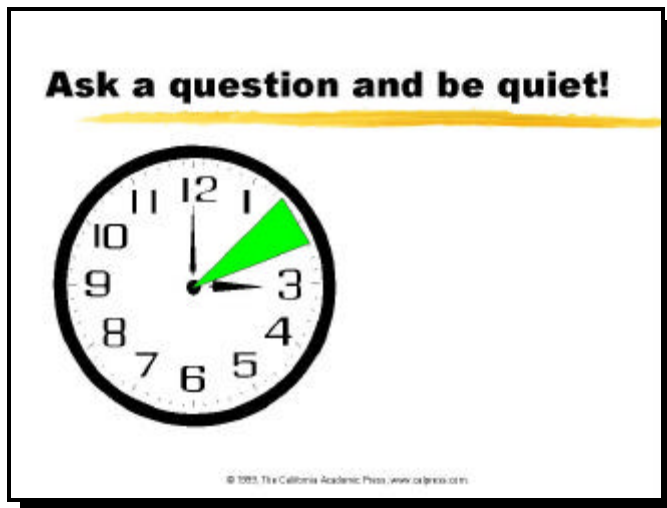
**A good CT class session
like a symphony.**



© 1999, The California Academic Press, www.cacpress.com

In education, you get what you measure.

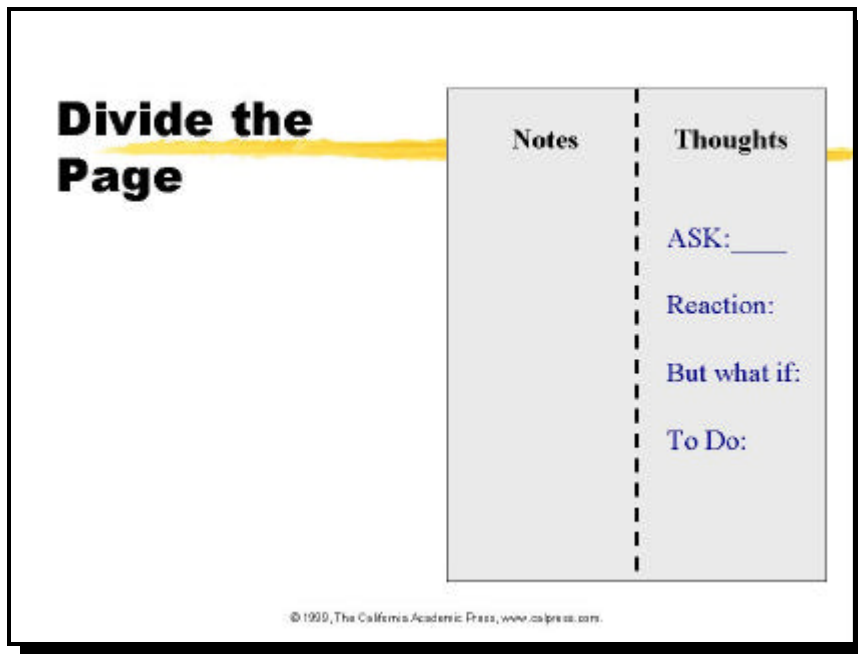
Teaching about thinking requires explicitly identifying, explaining, and evaluating the application of those strategies, methods, and patterns of good reasoning that one is modeling and expecting students to use. Teaching about thinking is what makes the teaching for thinking work.



Use silence.

It takes 8-12 seconds for an adult to process an new or complex question and formulate a reasoned response. (Newell, Toward Unified Theories of Cognition.)

Count out the seconds of time in your mind before you call on others to respond.



“Active Learning” is about active minds, not happy feet. Lectures can become good active learning opportunities, if well orchestrated.

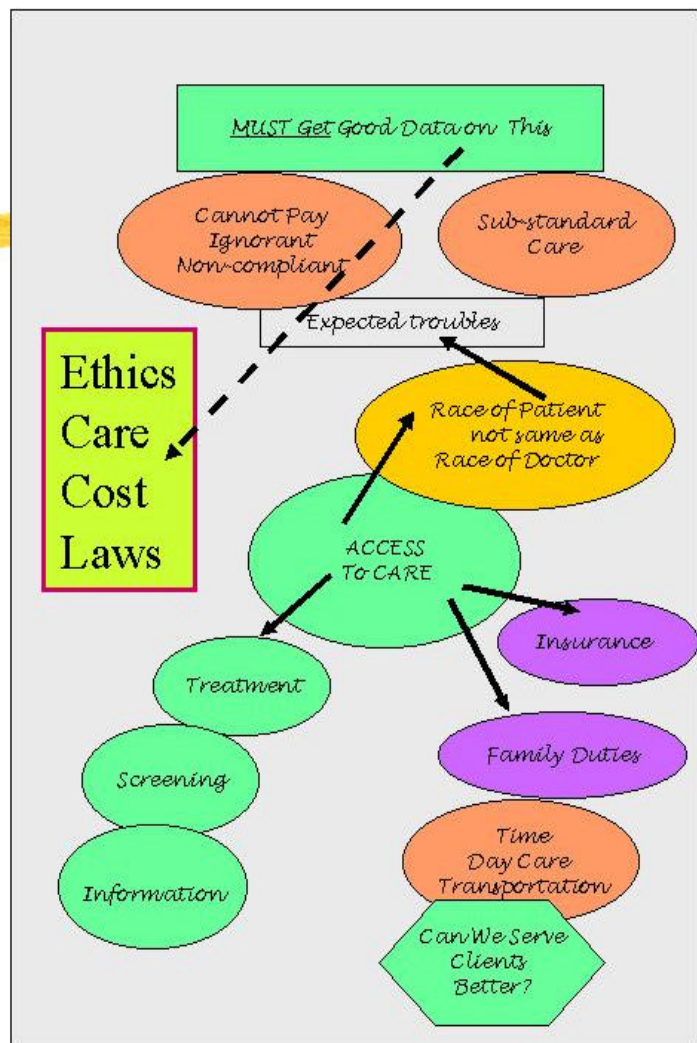
In those important learning times which require high-content presentations, learners need not be passive. Advise learners to divide their note pages in half. On one side

take as few notes as they deem absolutely essential. The notes need only log the moments that triggered the things written on the other half of the page. On that other side learners record the mental work they do during the lecture. Advise them to write down at least four kinds of things: important questions to explore further; analytical or critical reactions, affective responses, objections, or critiques; any insights, contrary or supplemental, assumptions or expectations that are challenged, and ideas about consequences foreseen and unforeseen; and, finally, things to do in order to more fully learn the content being presented.

The “idea spread” is a way of generating as well as communicating complex ideas. It is both a presentation and a learning strategy. The example below deals with access to health care. Lower left, it means treatment, diagnosis, and information. Lower right, two factors people weigh are their insurance coverage and their family duties. By understanding these factors we can address more successfully the question of how to provide our clients with better access to health care services. But are there some other kinds of factors that might inhibit access? For example, what expectancies do people have if they are not the same race/cultural group as their health care provider? Moving upward, suppose the person expects problems. For example that they might receive sub-standard care or that they may not be able to afford, understand, or accept the kind of care being recommended. We need to do some solid research on this. There are multiple issues here to explore including those that are ethical, legal, technically related to the kinds of care needed and available, and to the cost of that care. Since our species learns so effectively using visualization, the content is more easily and more fully recalled simply by visualizing the ideas as they were spread out for consideration. Animation, revealing the ideas and the arrows one by one, aids in analysis as well as recall.

Idea Spread:

From the middle,
up down, whatever
unfolds. Create a
semantic map with
conceptual and/or
causal linkages.



© 1999, The California Academic Press, www.calpress.com.

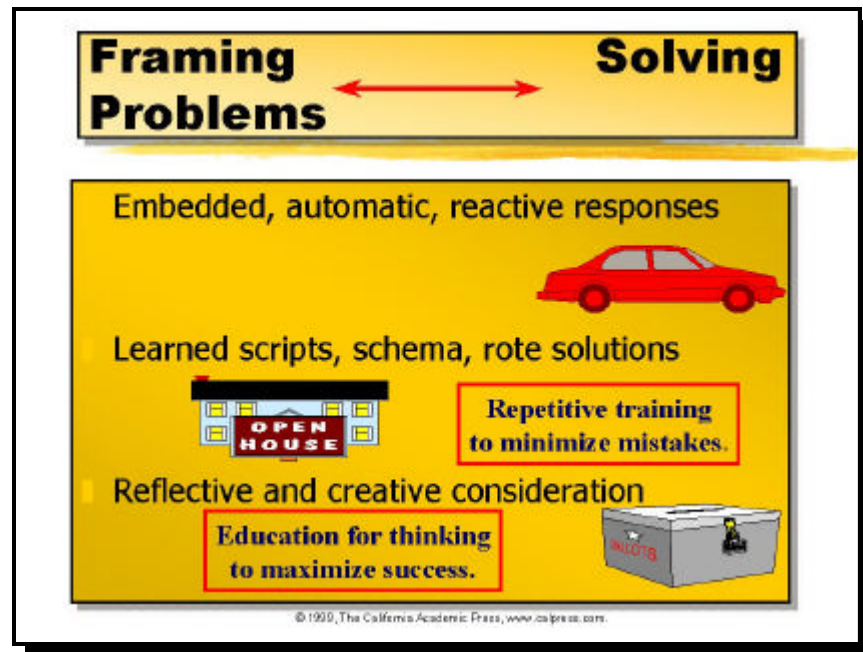
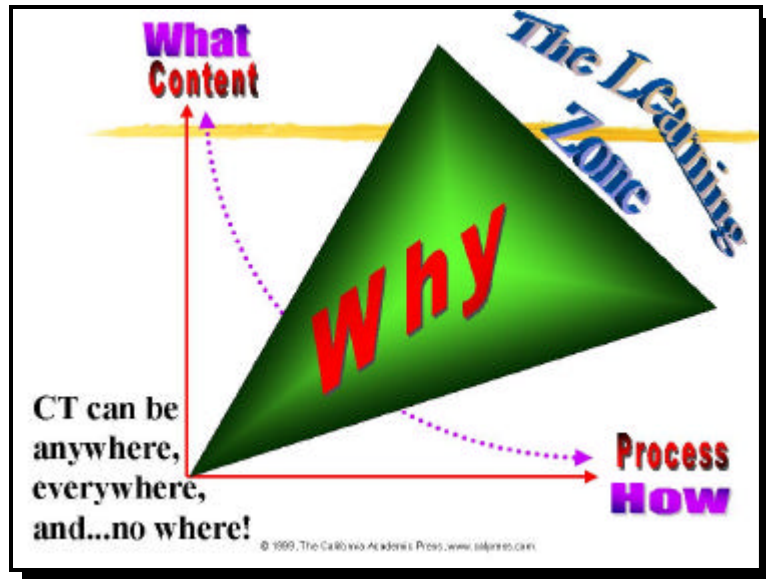
The urge to acquire content knowledge and the urge to comprehend processes are divergent but not inconsistent forces in learning. Being able to explain why is based on knowing both how and what.

Training is provided as a way of dealing with known problems by applying approved strategies in order to minimize risks. If the training is so deep that the responses become automatic, this can have many

benefits, for it frees us to think about problems as yet unresolved. Yet,

working only by rote or from scripts can also be extremely boring and can lead easily to the kinds of mistakes that happen when problems do not fit preconceptions. If your only tool is a hammer, you might think all problems are nails. Education is what we provide if the problems encountered may be novel or in need of reformulation, if

creativity and flexibility are needed for their resolution, and if our aim is to maximize success and growth.



Meta-cognitive Fishbowl

Put four people in a circle. They begin discussing a problem. After talking twice they must leave and pick someone else to take their place. The conversation progresses naturally. Meanwhile, three others are tasked with identifying, evaluating, and reporting on the thinking skills and dispositions exhibited.

© 1999, The California Academic Press, www.calpress.com.

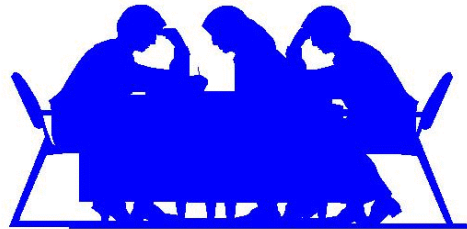
Watching others think, being able to pick up the strands of their reasoning, and explaining the application of their thinking skills and the influences of their dispositions develops one's skill at meta-cognition.

This variation on the fishbowl exercise is only one way to bring that about in an educational context.

Working in teams can include not only doing assignments and group projects, but taking tests as a team as well. Expect the noise level in the classroom to soar as students pair up or team up to puzzle through the test questions. Expect to be able to ask tougher and more thought provoking questions.

Make it a class critical thinking project to discuss ahead of time how a team test will be graded, how team will be formed, and how to handle the classic "free rider" problem of students who do not come prepared to pull their weight.

Team Testing



Logistics?
Impact on student learning?
How to assign fair grades?

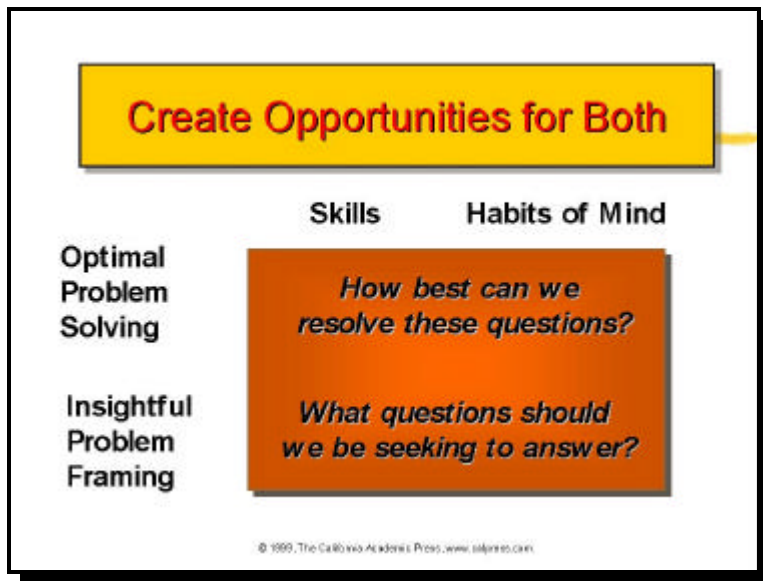
© 1999, The California Academic Press, www.calpress.com.

To Teach Critical Thinking

- Model CT skills and dispositions
- Create a culture of inquiry
- Diversify contexts of judgment
- Reward and challenge
- Guide reflection on the thinking process
- Engage students in thinking

© 1999, The California Academic Press, www.caipress.com

There is no secret to teaching for thinking. Students learn from what teachers do as much if not more than from what they say. To teach for thinking one must show the passionate disposition toward thinking and one must explicitly and reflectively use thinking skills to form reasoned judgments. One must express one's thinking in multiple contexts, including those that are rich in subject matter content and problem-complexity. The more the teacher is able to extend student's thinking into new domains of learning and inquiry, demanding solid content knowledge and the correct application of standards and methods appropriate to the domain, the stronger the student's thinking will become. It is a matter of active engagement, thoughtful reflection and reasonable reformulation of judgments. The most successful teacher will be the one who is able to both nurture and challenge thinking. Students must know that teachers demand good thinking, test for good thinking, and reward good thinking in their grading practices. They must also know that their teachers have every reason to expect students to think to the fullest of their abilities.



To teach well: Expect and reward virtue.

If we want people to be educated regarding how to frame problems insightfully as well as how to solve them optimally, then we should orchestrate opportunities for them to do both. Coaching the problem framing by exploring different ways that the issues might be understood and the priorities aligned

could be more effective and educationally more important than training people on problem solving. The formation of professionals who have the skills, knowledge, and habits of mind to be successful in their practice over the long term is educating for reasoned judgment.

What educators call critical thinking is what professional fields know as professional judgment. This is one of the links between liberal education and professional education. Another is the realization that promoting the common good demands reasoned judgment as well as justice and compassion.

